In the Claims

Claims 27-35, 40, 48, and 49 are pending in the application with claims 38, 43, and 45-47 cancelled herein.

1-26 (canceled).

27. (previously presented) An atomic layer deposition method comprising:

injecting a deposition precursor into a deposition chamber defined at least in part by chamber walls and comprising a substrate holder inside the chamber, a first of the chamber walls comprising a lid having an outer surface outside the chamber and an inner surface inside the chamber and a second of the chamber walls comprising a body;

exposing a substrate on the substrate holder to the precursor and chemisorbing only one monolayer of precursor material on the substrate in the absence of another deposition precursor;

while injecting the precursor and chemisorbing the monolayer, separately injecting a purge material at a first flow rate through at least one purge passageway through the lid from the outer surface to the inner surface and through a purge exit port into the chamber, the injected purge material flowing along at least a portion of the chamber walls;

separating the injected purge material from the substrate holder with a flow director provided inside the chamber and minimizing backflow of the injected purge material towards the substrate holder, the flow director extending downward from elevationally above the substrate holder to elevationally below a substrate on the substrate holder; and

ceasing the precursor injection, substituting the precursor injection for additional purge material injection, and adjusting the first flow rate to a second flow rate different from the first flow rate.

28. (previously presented) The method of claim 27 wherein the injecting the purge material further comprises not delivering the purge material to a substrate received by the substrate holder.

29. (previously presented) The method of claim 27 further comprising forming a curtain from the injected purge material concentric to the second of the chamber walls, the curtain flowing axially with respect to the chamber.

30. (original) The method of claim 27 further comprising forming an annular curtain from the injected purge material.

31. (original) The method of claim 27 wherein the injecting purge material further comprises delivering the purge material through a dead space as to a precursor injected without the purge injection.

32. (previously presented) The method of claim 27, wherein the flow director is provided on the inner surface of the first of the chamber walls.

33. (original) The method of claim 27 further comprising distributing purge material inside the lid from at least one entry into the lid to a plurality of exits from the lid formed as an about equally spaced ring of exits outside a lateral confine of the substrate holder.

34. (previously presented) The method of claim 27 wherein the injecting the precursor further comprises injecting at least one process chemical into the chamber from elevationally above the substrate holder and inside a lateral periphery of the substrate holder.

35. (original) The method of claim 34 wherein the injecting the precursor further comprises delivering the precursor to a substrate received by the substrate holder.

Claims 36-39 (cancelled).

40. (previously presented) The method of claim 29, wherein the purge curtain flowing comprises flowing the injected purge material along the chamber walls, wherein the purge curtain is formed between a dead space and an injected precursor to prevent the precursor from migrating into the dead space.

Claims 41-47 (cancelled).

48. (previously presented) The method of claim 27 wherein the purge exit port comprises one annular exit port and the injecting the purge material through the purge passageway through the lid comprises injecting through an enclosed annular channel and through a plurality of enclosed radial channel extensions from the annular channel to the one annular exit port along radii of the annular channel.

49. (previously presented) The method of claim 27 wherein injecting the purge material at the first flow rate occurs at a pressure less than about 200 milliTorr and injecting the purge material at the second flow rate occurs at a pressure greater than about 500 milliTorr.